

SEDIMENTS

Newsletter of the North Carolina Sedimentation Control Commission

Buncombe and Wake Counties Win Awards for Excellence in Erosion and Sediment Control

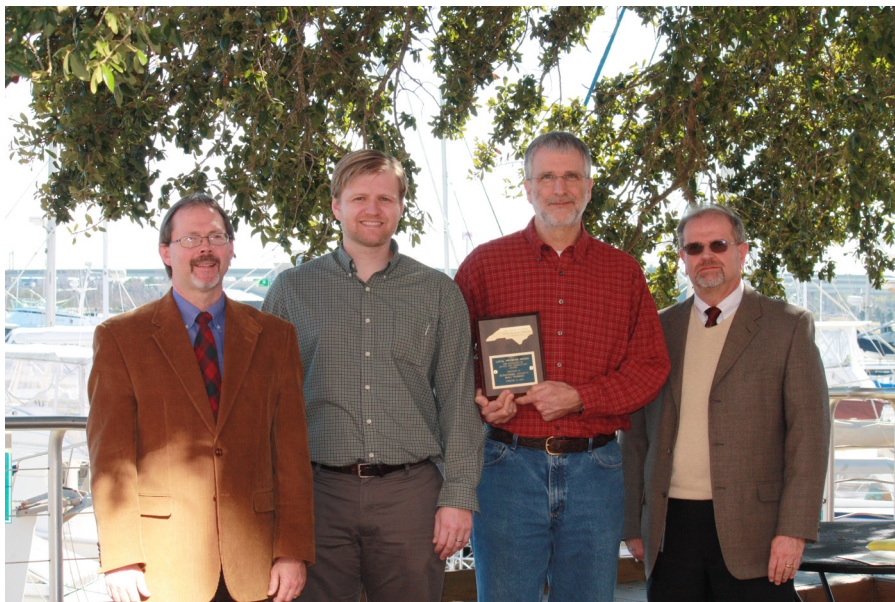
By Evangelyn Lowery-Jacobs, Sedimentation Education Specialist, NCDENR-Division of Energy, Mineral and Land Resources - Land Quality Section, Raleigh, NC

The annual Local Programs Workshop and Awards Banquet was held at the Doubletree by Hilton Riverfront in New Bern, NC on February 6, 2013. This year's keynote speaker was James Rhodes, AICP, Pitt County Planning Director. This annual workshop brought together delegates from each of the 52 local programs throughout the state and specialized in training and discussion of erosion and sediment control issues in North Carolina. Support for the Awards Program is provided by the North Carolina Sedimentation Control Commission, NC Department of Environment and Natural Resources,

Division of Energy, Mineral and Land Resources, Land Quality Section, and the Water Resources Research Institute of the University of North Carolina.

Local erosion and sediment control programs have the ability to exercise greater control over erosion and sediment control in their respective jurisdictions and may often inspect sites more frequently than the state erosion and sediment control program. Furthermore, local erosion and sediment control program ordinances may be more restrictive than state law, giving

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2013 Small Local Program Winner: Buncombe County. (L-R): Gray Hauser (LQS), Shane Briggs (Buncombe Co), Doug Sharp (Buncombe Co), and Joe Glass (SCC member)

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SEDIMENTS is a newsletter published by the N.C. Sedimentation Control Commission to provide information and assistance to the regulated community and to facilitate communication among personnel of state and local erosion and sedimentation control programs. SEDI-MENTS is available in electronic form at: <http://portal.ncdenr.org/web/lr/newsletters>

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State of North Carolina,
Department of Environment & Natural Resources
John E. Skvarla, III, Secretary

Division of Energy, Mineral, and Land Resources.
Tracy Davis, Director

News from Land Quality Section

Land Quality Section Summary Statistics:

Plan Approvals, Inspections, and Enforcement Activities - Regional LQS Offices for the last ten years (Not included are the erosion and sediment control plans approved by local government sedimentation programs or land disturbed by NCDOT)

FY 2001-2002

24,407 Disturbed Areas per Year
4,098 E&S Plan Reviews
16,070 Site Inspections
3,060 New Permitted Sites
39 Notices of Violations
80 Enforcement Case Referrals

FY 2002-2003

24,438 Disturbed Areas per Year
14,681 Site Inspections
2,970 New Permitted Sites

FY 2003-2004

33,758 Disturbed Areas per Year
14,725 Site Inspections
3,023 New Permitted Sites

FY 2004-2005

35,818 Disturbed Areas per Year
4,870 E&S Plan Reviews
16,050 Site Inspections
3,394 New Permitted Sites
758 Notices of Violations
64 Enforcement Case Referrals

FY 2005-2006

40,110 Disturbed Areas per Year
4,870 E&S Plan Reviews
16,516 Site Inspections
3,374 New Permitted Sites
731 Notices of Violations
77 Enforcement Case Referrals

FY 2006-2007

35,441 Disturbed Areas per Year
5,270 E&S Plan Reviews
13,189 Site Inspections
3,546 New Permitted Sites
658 Notices of Violations
67 Enforcement Case Referrals

FY 2007-2008

31,569 Disturbed Areas per Year
4,611 E&S Plan Reviews
15,806 Site Inspections
2,972 New Permitted Sites
492 Notices of Violations
88 Enforcement Case Referrals

FY 2008-2009

61 FTE in LSQ*
24,838 Disturbed Areas per Year
3,260 E&S Plan Reviews
19,884 Site Inspections
2,542 New Permitted Sites
557 Notices of Violations
60 Enforcement Case Referrals

FY 2009-2010

52 FTE in LSQ*
23,477 Disturbed Areas per Year
3,272 E&S Plan Reviews
437 Express Permit Reviews
24,745 Site Inspections
2,106 New Permitted Sites
560 Notices of Violations
69 Enforcement Case Referrals

FY 2010-2011

48 FTE in LSQ*
19,200 Disturbed Areas per Year
3,121 E&S Plan Reviews
475 Express Permit Reviews
20,152 Site Inspections
2,118 New Permitted Sites
363 Notices of Violations
29 Enforcement Case Referrals

FY 2011-2012

40 FTE in LSQ*
24,495 Disturbed Areas per Year
2,832 E&S Plan Reviews
527 Express Permit Reviews
15,659 Site Inspections
1,959 New Permitted Sites
247 Notices of Violations
18 Enforcement Case Referrals

*FTE is number of full time equivalent positions in Land Quality Section for erosion and sedimentation control program. The recent reduction in inspections is directly attributed to the reduction in force of inspector positions since September 2010.



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Send comments to Evangelyn Lowery-Jacobs, NCDENR-Land Quality, 1612 Mail Service Center, Raleigh, NC 27699-1612. Email: evangelyn.lowery-jacobs@ncdenr.gov.

To receive an email notice of *Sediments* issues, please see page 1 for list service instructions.

Personnel of the Land Quality Section of the NC Department of Environment and Natural Resources provide information and assistance for implementation of the NC Erosion and Sedimentation Control Program. For assistance, please contact the Regional Engineer or the Raleigh headquarters listed below:

- Laura Herbert, PE
2090 US Hwy 70
Swannanoa, NC 28778
(828)296-4500
- Brad Cole, PE
225 Green Street, Suite 714
Fayetteville, NC 28301
(910) 433-3300
- Zahid Khan
610 East Center Ave., Suite 301
 Mooresville, NC 28115
(704) 663-1699
- John Holley, PE
3800 Barrett Drive, Suite 101
Raleigh, NC 27609
(919) 791-4200
- Pat McClain, PE
943 Washington Sq. Mall
Washington, NC 27889
(252) 946-6481
- Dan Sams, PE
127 Cardinal Dr. Ext.
Wilmington, NC 28405-3845
(910) 796-7215
- Matt Gantt, PE
585 Waughtown St.
Winston-Salem, NC 27107
(336) 771-5000
- Gray Hauser, PE
Raleigh Central Office
512 N. Salisbury St., 1612 MSC
Raleigh, NC 27699-1612
(919) 707-9220

The North Carolina Sedimentation Control Commission

The Sedimentation Control Commission (SCC) was created to administer the Sedimentation Control Program pursuant to the NC Sedimentation Pollution Control Act of 1973 (SPCA). It is charged with adopting rules, setting standards, and providing guidance for implementation of the Act. The composition of the Commission is set by statute to encompass a broad range of perspectives and expertise in areas related to construction, industry, government, and natural resource conservation and quality. All members are appointed by the Governor and serve three-year terms, except for the Director of the Water Resources Research Institute of the University of North Carolina, who serves as long as he remains Director. The chairman of the SCC is named by the Governor. The following is a list of current members with the organizations they represent:

Chair:

Robin K. Smith
Burnsville
Non-governmental Conservation

Commissioners:

Heather E. Jacobs Deck
Washington
Non-governmental Conservation

Mr. Tommy C. Anderson
NC League of Municipalities
NC Association of County Commissioners

Joseph E. Glass
Fayetteville
Professional Engineers of NC

Kevin Martin
Franklinton
NC Environmental Management Commission

Rich McLaughlin
Raleigh
NC State University, Dept. of Soil Science

Charlotte Mitchell
Raleigh
NC Mining and Energy Commission

Randy Veltri
Charlotte
NC Public Utilities

Jonathan K. Bivens
Goldsboro
Carolinas Associated General Contractors

Vacant
Raleigh
Water Resources Research Institute of
The University of North Carolina

Rob Weintraub
Wake Forest
NC Home Builders Association

Manly West
Moyock
NC Soil and Water Conservation Commission

Announcement of Combined Self-Monitoring and Self-Inspection Form

By *Evangelyn Lowery-Jacobs, Sedimentation Education Specialist, NCDENR-Division of Energy, Mineral and Land Resources - Land Quality Section, Raleigh, NC*

The Sedimentation Pollution Control Act was amended in 2006 to require that persons responsible for land-disturbing activities inspect a project after each phase of the project to make sure that the approved erosion and sedimentation control plan is being followed.

Rules detailing the documentation of these inspections became effective October 1, 2010.

To simplify documentation of Self-Inspection Reports and NPDES Self-Monitoring Reports, a combined form is now available. The new form was developed jointly by the Division of Water Quality and the Division of Energy, Mineral and Land Resources. The requirements of both agencies can be met using the combined form.

The self-inspection program is separate from the weekly self-monitoring program of the NPDES Stormwater Permit for Construction Activities. The focus of the self-inspection report is the installation and maintenance of erosion and sedimentation control measures according to the approved plan. The inspections should be conducted after each phase of the project, and continued until permanent ground cover is established.

The Combined DWQ-DEMLR Construction Stormwater Monitoring form will be available as a PDF and Word document from the Land Quality web site, <http://portal.ncdenr.org/web/lr/erosion>.

If you have questions, please contact the Land Quality Section at a DENR Regional Office.



LQS Personnel Changes

Matt Osborne left Land Quality to take a position with the City of Winston-Salem Erosion Control Program.

Ryan Swaim left Land Quality to take a private position.

Justin Harcum left Land Quality to take a position with the City of Raleigh.

Nick Mills transferred from the Wilmington Regional Office to the Fayetteville Regional Office.

NC Sedimentation Control Commission: February Actions

At its meeting on February 28, 2013, the NC Sedimentation Control Commission (SCC) took the following actions:

Compost Socks and Riparian Area Seeding – Specifications

- Adopted practice standard and specification for the E&SC Planning and Design Manual for **Compost Socks** and **Riparian Area Seeding** as recommended by the Technical Advisory Committee (TAC). These can be found at:

http://portal.ncdenr.org/c/document_library/get_file?uuid=cbc7c57c-5034-4adc-8660-2c04a0758208&groupId=38334

Delegated Local Programs

- *Buncombe County*: Approved the continuation of Local Delegation of erosion and sediment control (ES&C) program.
- *Iredell County*: Approved the continuation of Local Delegation with recommendation to ensure runoff conveyance measures are adequately planned and that pipe outlets do not discharge into fill slopes.
- *Pitt County*: Approved the continuation of Local Delegation.
- *City of Asheville*: Approved the continuation of Local Delegation.
- *City of Wilson*: Approved the continuation of Local Delegation.
- *Town of Cary*: Approved the continuation of Local Delegation.
- *Town of Apex*: Approved the continuation of Local Delegation.

Note: All Local Delegations approved were also asked to follow the LQS recommendations to enforce ground cover timeframes by documenting when slopes have been graded or areas are left idle, and to continue to check self-inspection records.

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Memorandum of Agreements (MOA) with Local Programs

The new MOA was approved by the SCC in May 2011 and is to be adopted by each local program and submitted for approval by the SCC.

http://portal.ncdenr.org/c/document_library/get_file?uuid=e04f02e5-6d80-4cc6-abe9-aa6a6d5775fd&groupId=38334

The SCC approved MOAs with the following local programs:

- *Buncombe County*
- *Chatham County*
- *Jackson County*
- *New Hanover County*
- *Wake County*
- *Avery County*
- *City of Winston-Salem/Forsyth County*
- *City of Burlington*
- *City of Wilson*
- *City of Henderson*
- *Town of Cary*

Amendment to Local Programs Ordinance

- *Lincoln County:* Approved the submitted amendments for the Erosion Control Ordinance. Three major changes were made: 1) Specify an approved erosion and sedimentation control plan is required for any non-residential land disturbance of 20,000 square feet or greater requiring a building permit; 2) to specify new stabilization timeframes (same as NPDES requirements, 7 days for slopes greater than 3:1 and 14 days for other areas); and to 3) increase the minimum width of the buffer zone along a watercourse to 50 feet.
- *Avery County:* Approved the submitted amendments for the Erosion Control Ordinance. Major change was: to change stabilization timeframes to 21 calendar days.

Support documents for SCC actions may be found on-line at:

<http://portal.ncdenr.org/web/lr/land-quality>

SCC 2013 Meeting Dates

10am, Ground Floor Meeting Room, Archdale Building

- Thursday, May 16
- Thursday, August 15
- Thursday, November 7

New SCC Member

Ms. Charlotte A. Mitchell was appointed by Governor Pat McCrory to represent the North Carolina Mining and Energy Commission as a representative of nongovernmental conservation interests on the SCC. She became a member of the SCC in February 2013. She is an attorney with the law firm of Styers, Kemerait & Mitchell in Raleigh. Ms. Mitchell focuses her practice in the areas of utility law, zoning and land use law, administrative law, and business and general civil litigation. Ms. Mitchell's utility practice involves representation of both private water and wastewater clients and governmental entities in a variety of water and wastewater issues.

Awards for Excellence

(continued from page 1)



Keynote Speaker: James Rhoads, AICP, Pitt County Planning Director.

additional control over the development occurring within their respective jurisdictions. The North Carolina Sedimentation Control Commission recognizes the importance and the value of local erosion and sediment control programs in controlling pollution by sedimentation to the waters of North Carolina. In addition to training, the workshop seeks to recognize outstanding local programs. Each year, awards of excellence are presented to programs in two categories:

- Small program – program providing 0-3 man-years or full-time equivalents supporting erosion and sediment control
- Large program – program providing 3+ man-years or full-time equivalents supporting erosion and sediment control

This year, Buncombe County received the Local Program Award of Excellence for a small program.

Buncombe County has a steady workload. Two people work full-time in sediment and erosion control. Erosion Control for Buncombe County is administered by the Planning and Development Department.

The Buncombe County staff receiving the award are: Shane Briggs, Erosion Control Technician and Doug Sharp, Erosion Control Officer.

Buncombe County provides an “Erosion and Sedimentation Control Plan – Development Checklist” which is accessible through their web site. They also include a list and explanation of the ‘Most Common Reasons for Disapproval of a Plan.’ Also available from their web site are the following resources to help prepare an Erosion and Sedimentation Control Plan:

- Self Inspection Program Form
- Application for Farmland Preservation

Division Name Change

The Division of Land Resources, NC Department of Environment and Natural Resources has a name change to: Division of Energy, Mineral, and Land Resources. This change is due to the passage of Shale Gas Bill (2012-143). The Shale Gas Bill has delegated the rulemaking process to the Division of Energy, Mineral, and Land Resources. A new Energy Program is housed within the Land Quality Section with four new positions.

To report possible violations of the NC Sedimentation Pollution Control Act, call
1-866-STOPMUD
786-7683

Awards for Excellence

(continued from page 4)

- Fee Schedule
- Land Disturbing Permit Application
- Checklist and Guidelines for the Preparation of Erosion & Sedimentation Control Plan.

As of November 2012, the county had 404 active projects and had recently reviewed 24 plans. The Buncombe County Local Program is visiting sites on a frequent basis. In 2012 the county had conducted 1,706 inspections, issued 19 notices of violations, and assessed one civil penalty.

More information on the Buncombe County's Erosion and Sediment Control program may be found on their website at:

[http://www.buncombecounty.org/Govern-
ing/Depts/Planning/ErosionControl.aspx](http://www.buncombecounty.org/Govern-
ing/Depts/Planning/ErosionControl.aspx)

The Erosion & Sedimentation Control Program for Wake County received the Local Program Award of Excellence for a large program. Wake County's Department of Environmental Services is responsible for enforcement of Wake County's local program for erosion control, stormwater and floodplain management.

Wake County's Local Program has 10 full time staff providing 8 full-time equivalents to Erosion and Sedimentation Control. The Wake County staff receiving the award are: Joseph Threadcraft, Director, Department of Environmental Ser-

vices; Britt Stoddard, Director of Water Quality; Melinda Clark, Watershed Programs Manager; Charles Phillips, Watershed Manager; Glenn Johnson, Watershed Manager; Kathryn Hobby, Watershed Manager; Betsy Pearce, Watershed Manager; Jennifer Mitchell, Watershed Manager; Shawn Springer, Watershed Manager; and Debbie Ryals, Watershed Manager.

Wake County manages erosion control for all unincorporated areas of the County and the following Municipalities: Fuquay Varina, Garner, Holly Springs, Morrisville, Knightdale, Wendell, and Zebulon. The program is organized in watershed management areas as defined by river basin watersheds. Each staff member conducts plan reviews and permitting for the following specific river basin subwatersheds:

- Neuse-Marks, Buffalo, Little River, Moccasin
- Neuse-Falls Lake
- Neuse-Lower Neuse
- Cape Fear-Jordan Lake, Harris Lake, Neills Creek
- Neuse River-Swift Creek
- Neuse-Middle Creek
- Neuse-Crabtree Creek, Walnut Creek

Wake County operates an erosion prevention program that aims to prevent sediment from leaving construction sites and contaminating streams, lakes, and rivers within Wake County's watersheds.

They accomplish this by enforcing state and local erosion prevention regulations and by working with developers, builders and landowners in Wake County.

Wake County requires an Erosion Control & Stormwater Joint Application and Permit for land disturbance of 1 acre or greater. They provide assistance and web-site tools for their minimal requirements for the following:

- Plan approval process
- Construction sequence
- Stockpile requirements
- Seeding specifications
- Sediment basin design criteria

All single home construction sites in Wake County's jurisdiction are also required to have adequate erosion control installed prior to the footing inspection. The county does not require an Erosion and Sedimentation Control (E&SC) permit when building on an individual lot and disturbing less than 1 acre; however, they DO require the installation of minimum E&SC measures for all lots regardless of size of disturbance. These minimum requirements for single lot and disturbance of less than one acre include:

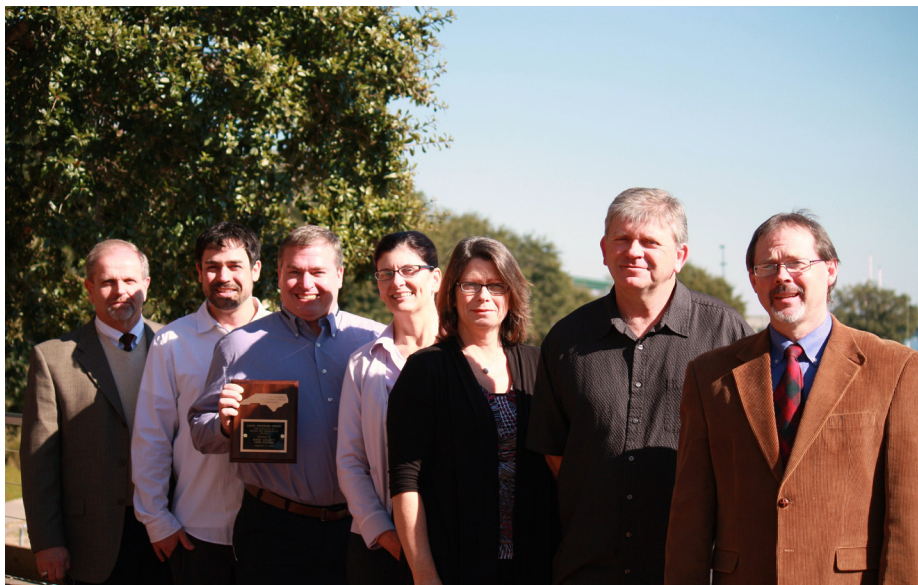
1. Gravel pad, 10 feet in width and 30 feet in length, or equivalent, as the access point(s) for construction vehicles
2. Silt fences on the low side of the lot prior to the initial footing inspection that is conducted by the Building Inspections Division.

The Wake County Local Program is visiting sites on a frequent basis. As of May 2012, the county had 265 active projects and had reviewed during the previous 12 months 136 plans with 69 approvals and 67 disapprovals. The staff had conducted 5,301 inspections, issued 7 notices of violations, and assessed one civil penalty in the previous 12 months.

More information on Wake County's Erosion and Sediment Control program may be found on their website at

[http://www.wakegov.com/water/stormwa-
ter/](http://www.wakegov.com/water/stormwa-
ter/)

Congratulations to these two well-deserving programs in recognition of their excellence in erosion and sediment control.



Wake County Watershed Management Staff, (left to right): Joe Glass, Shawn Springer, Charles Phillips, Melinda Clark, Debbie Ryals, Glenn Johnson, Gray Hauser, and not pictured: Kathryn Hobby, Betsy Pearce, and Jennifer Mitchell.



A Tale of Turbidity in Two Watersheds

By Rich McLaughlin, Professor, Department of Soil Science, NC State University. Adapted from article in *Environmental Connection* 6(4):11

Many of us have heard the standard refrain of the consequences of turbidity in surface waters: harm to aquatic organisms and ecology, lowered recreational value, and increased water treatment costs, among other impacts. We have also been told that climate change will likely bring more extreme weather events. A study in Taiwan evaluated the impacts of heavy rain events, such as typhoons, on turbidity at the water intake of a large water treatment plant¹. The authors described the main reservoir water source as being heavily polluted from raw sewage and illegal industries, but no other description of land use was offered. Their purpose was to relate rainfall intensities to turbidity at the plant intake. They indicated that turbidity above 3,000 nephelometric turbidity units (NTU) causes major problems for most water treatment plants, and they chose 5,000 NTU as the threshold for their analysis. Using

a mathematical approach called an artificial neural network, they determined that rain events exceeding 165 mm day⁻¹ (6.5 in day⁻¹) were likely to bring turbidity above 5,000 NTU. At this location, there was a greater than 10% chance of that occurring, which they deemed an unacceptable risk to the water supply of almost 2 million people. No solution was suggested, however.

In a very different setting in Tampa Bay, Florida, the relationship between turbidity in the Bay tributaries and land use changes was evaluated over a 10 year period from 1996-2006². In this case, only one sample had a turbidity above 10 NTU, quite different than the study in Taiwan. Over the time period evaluated, the watershed became somewhat more developed (+2.6%) with less agriculture (-1.8%) and scrub land (-1.4%). However, the authors found a slight but statistically significant reduction in turbidity over the same period. They had a number of hypotheses to explain this trend. Because the soils are relatively porous and ground water is shallow, nutrients leached from agricultural fields can quickly find their way to the streams. The reduction in agriculture may have reduced nutrient inputs to the watershed, thereby reducing algal production. In addition, the prolifera-

tion of stormwater retention ponds in the watershed may have prevented sediment delivery into the streams. They stressed that their findings are for a low-slope watershed with shoreline development, and data from other watersheds of similar scale will need to be analyzed to confirm their trends.

¹Chang, C-L, and C-S Liao. 2011. Assessing the risk posed by high-turbidity water to water supplies. *Environmental Monitoring and Assessment* 184: 3127-3132.

²Madrinan, M. J. M., M. Z. Al-Hamdan, D. L. Rickman, and J. Ye. 2012. Relationship between watershed land-cover/land-use change and water turbidity status of Tampa Bay Major Tributaries, Florida, USA. *Water, Air, and Soil Pollution* 223: 2093-2109.



IECA 2013 Moderator Experience

By Tyler Sowers, an undergraduate in the Soil Science Dept. at NC State University

I had been working for about a year in one of the university soil science labs when I received the opportunity to be a moderator at the IECA 2013 Conference. Having never been to the West coast, or traveled much in general, the opportunity to attend a national conference in San Diego was really special.

Being a moderator really improved my networking skills. It was interesting to hear the backgrounds of various IECA members and what they do in their careers. Listening to this helped me understand the various job opportunities that pertain to my interest in soil science. It was a great experience meeting fellow moderators and establishing friendships that I hope to continue in the coming years. Presenting my poster also helped me better my public speaking skills, and am overjoyed to have received second place in the poster contest.

I am thankful to the IECA Southeast Chapter and IECA for the scholarship so that I could take part in such a memorable event. I visited many memorable San Diego sites, met a lot of wonderful people, and learned skills that will help me in my future career. I appreciate the kindness that was shown to me by the members of the IECA, especially those of the Southeast Chapter, and hope to continue my experiences with this association next year.



International Erosion Control Association

IECA's Environmental Connection The World's Largest Soil & Water Event!

February 25-28, 2014

Town and Country Resort and Conference Center
Nashville, Tennessee, USA

<http://www.ieca.org/conference/annual/ec.asp>

The premier educational event for the erosion and sediment control industry. Environmental Connection has more erosion, sediment control, and stormwater focused training, technology and networking events than any other event. Over 4 days, Environmental Connection provides peer-reviewed education, products and technology which address four educational tracks: Erosion and Sediment Control, Stormwater Management, Surface Water Restoration, and MS4 Management. There are six Focus Areas for the Erosion and Sediment Control Educational Tract:

- Wind Erosion
- SWPPP Management
- Slope Technology
- Erosion and Sediment Control BMPs
- Vegetative Establishment
- Construction Inspection, Monitoring, & Maintenance

Types of presentations will include technical papers, case studies, workshops, forum/panel discussions, full and half-day courses, posters, and product practicum.

Information: <http://www.ieca.org/conference/annual/ec.asp>



Newsletter of the North Carolina
Sedimentation Control Commission
c/o NCSU Water Quality Group
Campus Box 7637
Raleigh, NC 27695-7637

Calendar of Events

5/21/2013	E&SC Dual Workshops: Device Installation and Turbidity Control, Raleigh, NC http://www.cvent.com/d/tcqfgh	8/7/2013	Level II: Erosion & Sediment Control/Stormwater Site Management, Asheville, NC http://go.ncsu.edu/ESCLevel1-2
6/5/2013	Level III: Design of Erosion and Sediment Control Plans, Raleigh, NC http://www.bae.ncsu.edu/workshops/dot/	8/8/2013	Level I: Erosion & Sediment Control/Stormwater Inspector/Installer, Asheville, NC http://go.ncsu.edu/ESCLevel1-2
6/11/2013	Level I & II Recertification: Erosion & Sediment Control/Stormwater, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2	10/29/2013	Level I & II Recertification: Erosion & Sediment Control/Stormwater, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2
6/12/2013	Level II: Erosion & Sediment Control/Stormwater Site Management, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2	10/30/2013	Level II: Erosion & Sediment Control/Stormwater Site Management, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2
6/13/2013	Level I: Erosion & Sediment Control/Stormwater Inspector/Installer, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2	10/31/2013	Level I: Erosion & Sediment Control/Stormwater Inspector/Installer, Raleigh, NC http://go.ncsu.edu/ESCLevel1-2
7/21-24/2013	68th Annual Int'l Conference for the Soil & Water Conservation Society (SWCS): Choosing Conservation: Considering Ecology, Economics and Ethics. Reno, NV. http://www.swcs.org/13ac	12/03/2013	Level III: Design of Erosion and Sediment Control Plans, Raleigh, NC http://www.bae.ncsu.edu/workshops/dot/
7/21-24/2013	2013 American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting. Kansas City, MO. http://www.asabemeetings.org	12/04/2013	Level III Recertification: Design of Erosion and Sediment Control Plans, Raleigh, NC http://www.bae.ncsu.edu/workshops/dot/
8/6/2013	Level I & II Recertification: Erosion & Sediment Control/Stormwater, Asheville, NC http://go.ncsu.edu/ESCLevel1-2	2/25-28/2014	IECA's Environmental Connection, Nashville, TN http://www.ieca.org/conference/annual/ec.asp